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AUTHOR	McLoughlin, Catherine; Luca, Joe
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ABSTRACT

The needs of learners are changing rapidly and continually in response to an environment that is characterized by change at economic, political and technological levels. There is greater pressure on universities to work more closely with employers in contributing to the process of economic development through the creation of a skilled workforce. Universities are becoming increasingly flexible in their responses to meeting the lifelong learning agenda. Online experiential learning is an essential element in the move towards more situated and professional orientations and with the drive to providing students with real world working knowledge. Asynchronous communication tools and tasks are ideal conduits for the refinement of professional skills. This case study profiles an on-line approach to developing professional project management skills for multimedia developers and presents snapshot views of an online learning environment in which students developing real projects for industry clients. (Author)

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Experiential Learning On-Line: The role of asynchronous communication tools

Catherine McLoughlin
Teaching and Learning Centre, University of New England, Australia
mcloughlin@metz.une.edu.au

Joe Luca
Edith Cowan University, School of Communications & Multimedia, Western Australia
j.luca@cowan.edu.au

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Abstract

The needs of learners are changing rapidly and continually in response to an environment that is characterised by change at economic, political and technological levels. There is greater pressure on universities to work more closely with employers in contributing to the process of economic development through the creation of a skilled workforce. Universities are becoming increasingly flexible in their responses to meeting the lifelong learning agenda. Online experiential learning is an essential element in the move towards more situated and professional orientations and with the drive to providing students with real world working knowledge. Asynchronous communication tools and tasks are ideal conduits for the refinement of professional skills. This case study profiles an on line approach to developing professional project management skills for multimedia developers and presents snapshot views of an online learning environment in which students developing real projects for industry clients.

Theoretical Framework: Experiential Learning

Through the design of an asychronous online learning space, learners to were introduced to situations and ways of working with others that were experientially based. The processes of learning were emphasised from the outset and students were encouraged to have ownership of the learning, assessment and reflection processes. For Kolb (1984), the actual experiences people go through become the starting points for learning, and this underlying educational approach was reflected in the design of the online environment. Emotion and reflection are also an integral part of the cycle of learning, and reflective processes are intrinsic to learning from experience.

In an experiential learning cycle, the learner passes though each of four stages: concrete experience, reflective observation, abstract conceptualisation, and active experimentation. Our design ensured that we linked the experiential learning cycle to the online environment and the collaborative tools afforded by the technology as follows:

- *Active experimentation:* Students engaged in the discussion and resolution of problems through online discussion using multimedia tools to support the display of responses (eg., Cox, 1994).
- *Task engagement*: Peers analysed the output of the task, and compared problem-solving approaches through discussion, email and conferencing activity (Bonk & Cummings, 1998).
- *Reflection*: Individuals analysed and reflected on the learning tasks, group processes and self-development as they tested new ideas and perspectives in virtual learning groups (English & Yazdani, 1999).
- *Formation of abstract concepts*: Utilising peer and tutor feedback, students developed understandings of key course concepts through engagement with new ideas supported via communications networks (Collis, 1998).

Experiential learning was reinforced in various ways through the course pedagogy, which focussed on both process and content aspects of learning. Students participated in decision-making processes by choosing and defining a topic for their project, creating and managing their own development team and negotiating peer assessment. The design was based on pedagogical and curriculum philosophies that acknowledge group work, peer feedback and support as essential to the development of independent learners and practitioners (Candy, 1994; Schrum, 2000). Reciprocity in giving and receiving peer feedback provides learners with opportunities to deepen their interpersonal skills. Through these processes they also developed reflective skills, and learnt to monitor their own learning and appreciate the contribution of others to their learning (Biggs, 1999).

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Thus, by focussing on learning process and peer supported activities, the learning activities took on a broader perspective, to include the totality of the learning experience while consolidating those aspects of professional learning that would enable the learners to develop transferable skills. This process is illustrated in Figure 1, which shows a focus on using learner-centered strategies that encourage learner independence and peer support, which in turn promotes the development of professional skills and process knowledge. These then directly contribute to deep and meaningful learning experiences, and as part of the authentic learning experience, students were able to share their knowledge and experiences with their peers through the Listserv.

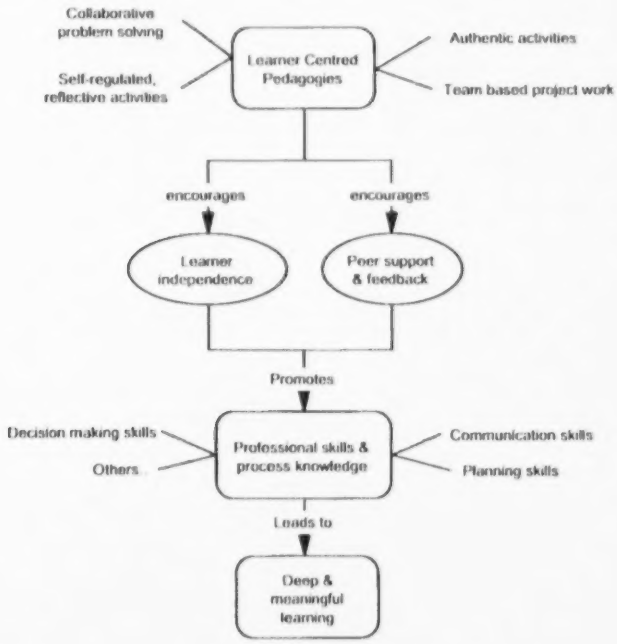

Figure 1: Student Learning Process

Context of the study: Course description

At Edith Cowan University, final year multimedia students are required to complete IMM3330/4330 "Industry Project Development". The aim of the unit is to consolidate core multimedia skills learnt in other units, while at the same making industry contacts and developing a portfolio item to assist with job applications. Students are provided with industry projects made available through the Faculty, or they can negotiate a project of their own, as long as it fulfils the course requirements, team-based, commercial in nature and not trivial. As part of the unit requirements, students are required to perform a needs analysis, provide a design specification, develop the web site, evaluate it, implement it and produce the required documentation (legal, procedures, metrics, templates and standards). The course objectives were closely linked to the professional competencies required for multimedia development in the industry and integrated authentic assessment tasks where learners could develop multimedia products in a team environment, thus replicating the skills required of them in the workplace.

The unit runs over a fifteen-week semester, with three hours allocated per week for tutorials and lectures. There are no formal face-to-face classes, the unit is largely run online from a Listserv, which provides a rich arena for advice, comments and feedback as there is about one hundred participants subscribed on the List, including industry representatives and ex-students. The constructivist approach used in structuring the project work and the Listserv activities was that students should benefit from the experiences of other students, industry representatives and academic tutors in an environment that promotes the exchange of ideas.

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A salient feature of the assessment tasks was the focus on learning processes, rather than mastery of content as this matched the orientation of the course towards skills development. The assessment tasks and associated learning processes are presented in Table 1.

Table 1: The assessment tasks and associated learning processes

Assessment task	Learning processes
Web-based product development	• Team work, planning, decision making project management
Self and peer assessment of team products	• Higher order thinking and analysis • Development of criteria for assessment • Giving feedback to peers • Reflection on feedback leading to revision of ideas
Student learning contract	• Self-directed learning
Team progress reports to the list serv	• Metacognitive skills and

To initially motivate students in using the Listserv, assessment was included which acknowledged individual contributions (for "quality" feedback and advice) as well as submitting team progress reports, which included students posting design ideas and prototypes and requesting feedback from others. Students were given templates to use in preparing these reports as well as rules or "netiquette" they were required to use when posting information to the Listserv. Encouraging students to initially use the Listerv by allocating marks was necessary, as proven by previous experience. However, in all cases, as the semester progressed, students became more comfortable with using the Listserv, and were posting on a variety of topics.

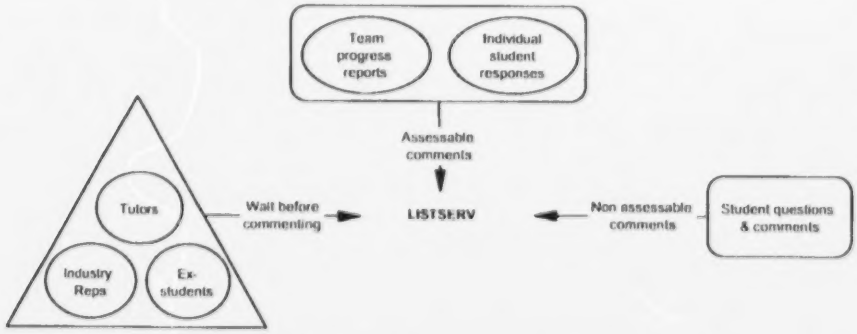

Figure 1. A model for online discussion based on peer partnerships

The tutors' involvement on the Listserv was structured to be non-interventionist so that they acted more as facilitators by focusing discussion, rather than as the "fonts of all wisdom". Figure 1 outlines the model used for promoting discussion on the Listserv. Issues were generated from team progress reports or from individual queries about technical, content, procedural, client, communication, team/peer through to how to get employment in the industry! However, as time progressed, students more freely contributed to the Listerv with many other issues, some of which were more philosophical in nature and posted without the objective of obtaining marks.

An example of how the Listserv was used to promote real world learning is as follows. The unit had 72 students, and the number of posts made to the Listserv over the semester was 1035 in total. In the example given below, a student is seeking help on a difficult issue i.e. how do you develop web sites

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which are compatible across all browsers? This problem has no real solution and is also a problem for professional developers in the industry. So this is a rich, authentic topic for discussion, in which students can assist their peers by giving their opinions or help on the issue. Another 12 replies follow in this thread, where the students kept debating the issue:

- *Initial Post "BROWSERS GRRRRR" - Hi all Scamers, I have come to a stage in the project where I just wish that there were a universal Web browser that combines Internet Explorer and Netscape!! It is Frustrating to design and program a website that will look exactly the same on both browsers, well it doesn't!! Not even with CSS style sheets that is the biggest nightmare I have been going through... Furthermore how the browsers for the different platforms ex Mac and Pc reads the content but does not display it the same.. I believe that it is a common problem that web developers have to deal with and I wonder if one have to be a fascist and say.. Ok The site is gonna look best on IE assuming that 70 % of the market is using it! And forget about the rest!!! It is a nightmare and I just cant get my head around it , Just want to continue the development of the clients site. Oh and our client is aware of the problem and has given us a Ok to ignore the small errors between the browser but still this is something that we have to deal with in future projects/ I will be glad is somebody has a good solution for my problem..*

- *Reply 1 - It is just a problem that exists, and seemingly always will, the CSS sheets will look different because Microsoft have one set of codes, and there is another for Netscape preferences. If you think the differences between Mac & PC are bad, I wouldn't recommend looking at what Unix would do to your code, furthermore the world does not end at MAC & PC if you get lucky and enough money see what a Sun system does they're maybe around $20k - apparently lots of fun with graphics and 3d. The only thing I could perhaps suggest is survey a portion of the target market early in the project to see what the majority of users have as browsers.*

- *Reply 2- Don't forget Amigas. I actually know one guy who has browsed the net with a Commodore 64 :) And soon Dreamcasts and Playstation 2. X-Box? But you have to draw the line somewhere, don't you?*

- *Reply 3- I don't know that you can, when it comes to your customers. It seems fairly certain that web developers, and web development technologies themselves, will have to grow to accommodate the fact that the web is now being viewed on everything from 35" monitors to mobile phones.*

- *Reply 4-As designers we need to design •for• the medium, not expect the medium to conform to our design. The nature of the web is just so variable that its stupid/lazy to just design for one browser or platform. As mentioned by Oliver, its just going to get worse when people start wanting to get web content on phones and PDA's. Remember that content is what people Content is mostly textual and text will go anywhere. Its not impossible to design an engaging site that will view correctly in all browsers from v3 upwards on all platforms (including •nix / webtv / dreamcast / palm) its just requires a bit of creativity. Something every designer should have an abundance of. I really want to see that c64 browser.*

- *Reply 5-I don't think there is a solution - other than creating very standard html sites that can be viewed from lynx to ie 5.5. But that's a bit boring... Create for the majority, that's my solution. I'm concerned with the ie4.75 on Mac that does not seem to support dhtml. Other than that I've been able to create a site that works the same on ie and NN 4.x and above. That's good enough for the client so I'm happy.*

This example shows how students supported each other through the virtual community and in doing so helped to develop their skills in communication, problem solving, and giving/accepting positive criticism from others. This community provided a "conduit" for the students in which they could share their experiences and knowledge, and provided a platform to constructively help each other.

Evaluation

As part of the project requirements, students were responsible for making contact with the client and discussing the scope and legal aspects of the development (educational software, IP, etc). These had to be negotiated so that the client had their needs satisfied, while at the same time the students were involved in producing a web-site that conformed to the requirements of an academic unit. This often

involved firstly understanding the client's needs and "educating" the client about web production, maintenance and costs.

From the evaluation questionnaire conducted at the end of the unit it appeared that the students were very positive about the structure of the unit and the use of the Listserv. Almost all the students wanted to remain subscribed on the List as a form of graduate Listserv (as well as offering advice to other students who will be enrolled in the future). Grounding the industry project in a commercial environment with the use of a Listserv for inter-team and inter-student communication was clearly successful, and added value to the students' experience in this unit. Contributing factors that led to its success include:

- The Listserv was treated as a mainstream activity which replaced face-to-face classes, and was integrated into the assessment system
- The industry partnership involved students dealing with authentic commercial, client and technical problems in the workplace and using the Listserv to ask for advice and share experiences

The tutors acted as a facilitators and not experts by not fostering discussion rather than questions; dealing with inappropriate responses offline; and identifying underlying issues and redirecting these as questions back to the Listserv for students to reflect on and discuss where appropriate.

Critical success factors

In this online unit, project based learning combined with asynchronous learning tools enabled students to develop a relationship with a client, create solutions to a design problem and develop a project brief. In the approach adopted here, the practice has added to it the learning aims, specific learning processes, assessment processes and the learning outcomes. Each of these involved partnerships with industry clients with learners taking advantage of the real world context to gain professional knowledge.

The success of the unit can be attributed to the following factors:

- A virtual community was formed through the use of a Listserv, which encouraged collective and collaborative learning rather than individualistic. The online social environments provided scope for group interaction, sharing and discussion and in depth exploration of issues.
- The content of the course was opened ended, and students had access to a website where they could add resources or choose the most relevant ones (see Figure 3). Access to relevant knowledge resources was oar of the "just in time "approach to planning, i.e. the choice of selecting resources is left to students who have to identify a learning need;
- The development of networked collaborative learning requires a focus on the processes of collaboration, and the well-being and development of the collaborative group (McGrath, 1990). In summary, this involves:
    - openness in the educational process
    - self-determination in learning
    - a real purpose in the cooperative learning process
    - a supportive learning environment
    - collaborative assessment of learning
    - assessment and evaluation of the ongoing learning process.

The notion of professional development and growth was recognised by learners to be more important than learning facts, figures and project management procedures. Students had to work closely with an industry client, develop a project brief and then communicate and negotiate the final product to a group of peers. Peer learning enabled student to reflect on the experience and learn from it.

Conclusion

The study illustrates an effective learning design involving experiential real world learning, which was integrated into the final year of tertiary multimedia course. The unit aimed to consolidate core multimedia skills learnt in other units, while at the same time having students making industry contacts and developing portfolios item to assist with their job applications.

Through authentic settings, students were engaged with industry projects, clients and assessment tasks. This was complemented with a virtual environment and asynchronous conferencing in which students exchanged ideas and helped each other cope with these authentic tasks. This, in combination with client negotiations, promoted the development of professional skills and process knowledge, which supported both process and product skills.

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